

CLAIMS

What is claimed is:

1. A method of communication in a network access system including an external processor and a programmable access device, said method comprising:

transmitting a control message from the external processor to the programmable access device to establish a configuration of the programmable access device; and

communicating messages from the programmable access device to the external processor for service processing in accordance with the configuration.

2. The method of Claim 1, wherein:

transmitting a control message comprises transmitting a filter control message to establish a configuration of a packet header filter in the programmable access device; and

communicating messages comprises communicating network messages filtered from a packet flow by the packet header filter of the programmable access device .

3. The method of Claim 2, and further comprising limiting communication of network messages from the programmable access device to the external processor by sending the programmable access device a message setting message interface flags in the programmable access device.

1 4. The method of Claim 1, wherein:

2
3 transmitting a control message comprises transmitting a monitor control
4 message to establish a configuration of a monitor in the programmable access device;
5 and

6
7 communicating messages comprises communicating reporting messages from
8 the programmable access device to the external processor in response to the
9 configuration of the monitor.

1 5. The method of Claim 4, wherein transmitting a monitor control message
2 comprises transmitting a control message to establish a threshold number of allowed
3 retransmissions.

1 6. The method of Claim 1, wherein transmitting a monitor control message
2 comprises transmitting a threshold activity level.

1 7. The method of Claim 1, wherein transmitting a control message comprises
2 transmitting a policer control message to establish a configuration of a policer in the
3 programmable access device.

1 8. The method of Claim 1, wherein transmitting a control message comprises
2 transmitting a forwarding table control message to establish a configuration of a
3 forwarding table in the programmable access device.

1 9. The method of Claim 8, wherein establishing a configuration of a forwarding
2 table comprises establishing a new forwarding table in the programmable access
3 device.

1 10. The method of Claim 1, wherein transmitting a control message comprises
2 transmitting a control message to establish a configuration of a scheduler and one or
3 more associated output buffers in the programmable access device.

1 11. The method of Claim 1, wherein transmitting a control message comprises
2 transmitting a shaper control message to establish a configuration of a shaper in the
3 programmable access device.

1 12. The method of Claim 1, wherein:
2
3 transmitting a control message from the external processor to the
4 programmable access device to establish a configuration of the programmable access
5 device comprises transmitting a control message specifying a source from which
6 packets are not to be accepted; and
7
8 the method further comprises dropping packets from the specified source by
9 the programmable access device.

1 13. The method of Claim 1, and further comprising in response to service
2 processing by the external processor, injecting a packet from the external processor

into packet flow through the programmable access device.

14. The method of Claim 1, wherein

transmitting a control message from the external processor to the programmable access device to establish a configuration of the programmable access device comprises transmitting a session deletion control message; and

the method further comprises the programmable access device deleting a session specified by the session deletion control message.

15. The method of Claim 1, and further comprising the external processor signaling network hardware to establish a network connection in response to receipt of a message from the programmable access device.

16. The method of Claim 1, and further comprising exchanging keepalive messages between the external processor and the programmable access device.

17. The method of Claim 1, wherein transmitting a control message comprises accessing a control processor on the external processor via an application programming interface.

18. The method of Claim 1, and further comprising in response to said control message, sending an acknowledgement from said programmable access device to said external processor.

1 19. The method of Claim 1, and further comprising communicating a state of a
2 session from the programmable access device to the external processor in response to
3 failure of a service controller servicing the session in the external processor.

1 20. The method of Claim 1, wherein transmitting a control message comprises
2 transmitting a control message via an intermediate communication network.

1 21. A network access system, comprising:

2
3 an external processor that transmits a control message specifying a
4 configuration; and

5
6 a programmable access device that, responsive to the control message,
7 establishes the configuration specified by the control message and communicates
8 messages to the external processor for service processing in accordance with the
9 configuration.

1 22. The network access system of Claim 21, wherein:

2
3 the programmable access device includes a packet header filter;

4
5 the control message comprises a filter control message that establishes a
6 configuration of the packet header filter; and

7
8 the messages communicated by the programmable access device comprise

9 network messages filtered from a packet flow by the packet header filter of the
10 programmable access device .

1 23. The network access system of Claim 22, said external processor comprising
2 means for limiting communication of network messages from the programmable
3 access device to the external processor by sending the programmable access device a
4 message setting message interface flags in the programmable access device.

1 24. The network access system of Claim 21, wherein:

2
3 the programmable access device comprises a monitor for network traffic;

4
5 the control message comprises a monitor control message that specifies a
6 configuration of the monitor; and

7
8 the messages communicated by the programmable access device comprise
9 reporting messages in accordance with the configuration.

1 25. The network access system of Claim 24, wherein the control message
2 specifies a threshold number of allowed retransmissions.

1 26. The network access system of Claim 24, wherein the monitor control message
2 specifies a threshold activity level.

1 27. The network access system of Claim 21, wherein:

2 the programmable access device comprises a policer; and

3
4 the control message comprises a policer control message that specifies a
5 configuration of the policer.
6

1 28. The network access system of Claim 21, wherein the control message
2 comprises a forwarding table control message that specifies a configuration for a
3 forwarding table.

1 29. The network access system of Claim 21, wherein:

2
3 the programmable access device comprises one or more output buffers for
4 outgoing packets and an associated scheduler; and

5
6 the control message specifies a configuration of the scheduler and the one or
7 more output buffers.

1 30. The network access system of Claim 21, wherein:

2
3 the programmable access device comprises a shaper; and

4
5 the control message comprises a shaper control that specifies a configuration
6 of the shaper.

1 31. The network access system of Claim 21, wherein:

2
3 the control message specifies a source from which packets are not to be
4 accepted; and

5
6 the programmable access device comprises means for dropping packets from
7 the specified source.

1 32. The network access system of Claim 21, said external processor comprising
2 means, responsive to service processing by the external processor, for injecting a
3 packet into packet flow through the programmable access device.

1 33. The network access system of Claim 21, wherein

2
3 the control message comprises a session deletion control message; and

4
5 the programmable access device comprises means for deleting a session
6 specified by the session deletion control message.

1 34. The network access system of Claim 21, wherein the external processor
2 comprises a signaling processor that signals network hardware to establish a network
3 connection in response to a message received from the programmable access device.

1 35. The network access system of Claim 21, said external processor and said
2 programmable access device each comprising means for exchanging keepalive
3 messages.

1 36. The network access system of Claim 21, wherein the external processor
2 comprises a control processor that outputs said control message and an application
3 programming interface through which said control processor is accessed.

1 37. The network access system of Claim 21, said programmable access device
2 comprising means, responsive to said control message, for sending an
3 acknowledgement to said external processor.

1 38. The network access system of Claim 21, wherein:

2
3 the external processor comprises a plurality of service controllers that
4 provide service processing; and

5 the programmable access device comprises means for communicating a
6 state of a session to the external processor in response to failure of a service
7 controller servicing the session.

1 39. The network access system of Claim 21, and further comprising a network
2 coupling the external processor and the programmable access device.